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ABSTRACT

Designed to help institutions considering library automation, this report describes the adoption, installation, and use of the Virginia Tech Library System (VTLS) at Ohio University. The report includes information on: (1) a task force created at Ohio University in 1978 to explore an automated circulation system; (2) installation and tape loading of the chosen system; (3) inauguration and upgrading of the system; (4) networking, including service to regional libraries and service to public libraries; and (5) difficulties encountered and lessons learned, including estimating equipment needs, estimating other costs, loading archival types, availability of the system during loading, securing the database, turnover in VTLS personnel, and delays in developing promised subsystems. Appendices include a diagram of OCLC-VTLS complementarity, sample online public access catalog screens and sample circulation screens, a list of equipment and its location on campus, a diagram of the intra-university computing network, and a map of Ohio's proposed microwave interconnect system. (THC)

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Paper presented at the Integrated Online Library Systems Second National Conference, Sept. 13-14, 1984, in Atlanta, Georgia

ALICE AT OHIO:

CANDID REFLECTIONS ON THE ADOPTION, INSTALLATION, AND USE OF THE VIRGINIA TECH LIBRARY SYSTEM (VTLS) AT OHIO UNIVERSITY

U.S. DEPARTMENT OF EDUCATION
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This report presents a mixed picture. In describing the accomplishments and disappointments in using a to-be-integrated library system, we hope that our experiences will interest and benefit others who are just embarking on the treacherous path of library automation. If we focus on the problems and possibilities encountered, it is because we think that these may be of greatest value. Today numerous publications offer detailed guides as to how to acquire and implement an integrated library system. We won't recapitulate these but rather will try to shed some light on what occurs when theory meets practice or when the irresistable ideal encounters immovable realities. Despite what follows, we are very pleased with our choice of the Virginia Tech Library System (VTLS), both in terms of services provided to our library users and our relationships with the vendors.

Background

Although the activities which culminated in our present use of VTLS began in 1978, our membership dating from more than a decade before in the then Ohio College Library Center (OCLC) greatly shaped our deliberations. On August 26, 1971, Ohio University was the first member institution to input, online, a record into the OCLC database [never mind that the system immediately crashed]. Twelve years later, on October 11, 1983, Ohio University Libraries input the first record into the national online union catalog of its second ten million records (no. 10000001). As a result of this long standing commitment to entering our holdings in machine readable form and in the OCLC database, our attention was directed toward a system which would utilize these existing records.

Like many other academic libraries during the 1970s, particularly those in Ohio, we anticipated and awaited the development of subsystems by OCLC to handle acquisitions, circulation, serials control, interlibrary loans, etc. which would build on the successful online national network for shared cataloging. Although, after several delays, the highly successful interlibrary loan subsystem became a reality in 1978, the other subsystems were postponed or only partially implemented.

By 1978, the increasing capabilities and decreasing costs of minicomputers led many libraries to develop library systems at the local or regional levels which utilized the machine-readable cataloging records created for the OCLC database. It was widely recognized that circulation and online public access catalogs were prime candidates for such an under-

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taking. At this same time, many "turnkey" systems developed by commercial firms were introduced.

Within this environment, OCLC's failure to negotiate an agreement with GEAC and its on-again, off-again approach to developing circulation and online public access catalog subsystems induced Ohio University to explore alternative solutions. As the founders of OCLC, libraries in Ohio tended to look to OCLC for answers to automation needs. As a result, Ohio libraries (including OHIONET) have lagged behind in the development of local or regional systems in comparison with libraries in many other states.

For Ohio University, automating circulation was identified as the first priority. To explore and evaluate the possibilities, a Task Force on an Automated Circulation System was created in September 1978, consisting of library and computer center staff with representatives of the faculty and the students. The Task Force was chaired by William Betcher, then Assistant Director for Public Services and subsequently Associate Director for Services. Its charge was:

- to conduct a feasibility study for an automated circulation system in the O.U. Libraries;
- to investigate various automated circulation systems available commercially and the possibility of developing a system locally (using university computer center personnel) patterned after Ohio State University (O.S.U.) Libraries' Library Control System (LCS);
- to gather cost information on various systems for comparison, and
- to submit a report with a set of recommendations.

Although directed toward an automated circulation system, the Task Force envisioned that the selected approach should include an online public access catalog or provide for inclusion of such in the near future.

O.S.U.'s LCS was identified as a strong contender in the early phases of the investigation because: 1) O.S.U. Libraries were willing to share the LCS software with us, and 2) utilization of LCS would lead to greater cooperation with our larger sister institution to the north. The investigation revealed, however, that adoption of LCS would require considerable, costly upgrading of the university mainframe and would require substantial staff support from the computer center. Money and personnel requirements dictated the abandonment of this option.

Throughout 1980 and 1981, the Task Force explored all then available turnkey circulation systems. Onsite visits, demonstrations, and consultations with user-institutions of various systems were arranged. In September 1981, the Task Force visited the Virginia Polytechnic Institute and State University in Blacksburg, and, shortly thereafter, the VTLS system was selected. In December of that year, Dr. Vinod Chachra and members of the VTLS team offered a presentation and demonstration in Athens, Ohio.

The following factors were significant in the selection:

1. Provision for an integrated library system with a linkage to OCLC's online cataloging and the utilization of MARC records to

create the local database.

2. Immediate availability of an automated circulation system and online public access catalog, with future expansion to include serials control, acquisitions, and management information. All of which complement the OCLC cataloging and interlibrary loan subsystems. Appendix A illustrates this interrelationship.

3. Ease of use of the system for both staff and patrons; subject search capability. Appendix B gives examples of the screens encountered by users and circulation staff.

4. Reasonable costs for the software package and the annual maintenance fee compared with other available systems. (When we contracted for the software in 1982, the cost was $20,000 plus an annual maintenance fee of $3,000. The annual maintenance fee entitles us to all enhancements released during the year. Although the charges for these have risen, they are still extremely competitive.)

5. The quality and vision of the personnel on the VTLS team.

6. The degree of local control and flexibility allowed by the system, including local networking and short-form cataloging.

While the Task Force had primary responsibility for identifying systems, other staff were engaged in complementary activities before the selection of the system. Special funding was obtained from the university for a $125,000 two-year retrospective conversion project in 1979. An NEH Challenge grant provided $150,000 for cataloging the Special Collections backlog, and a $115,999 grant under Title II-C of the Higher Education Act supported cataloging of the backlog in the nationally important Southeast Asia Collection. It was also recognized that special funding would be required to acquire the system hardware and software. In 1981, $150,000 was raised from private sources to largely cover these costs.

With the selection of the system, hardware was simultaneously ordered: an HP 3000/40 minicomputer and three 404 megabyte disk drives as well as terminals, wiring, etc.

In planning for installation, it was decided to place the CPU and related hardware in the University Computing Services (since renamed Computing and Learning Services) because that facility, unlike the main (Vernon R. Alden) library building, had secure space and the required environmental control. Moreover, Computing Services had the trained personnel to look after the hardware for the 102 hours 7 days per week that the library is open to the public. Capitalizing on existing excellent relations, Computing Services agreed to provide a separate room for the HP3000/40 and disk drives and to provide an experienced systems analyst to be responsible for the library system in return for which a .5 FTE position was transferred to Computing Services.

During the past two and one-half years, this arrangement has worked extremely well. Augmentation of the existing expertise in the universi-

ty's Computing Services has assured the necessary technical support while freeing library staff to concentrate on library aspects of the applications. Building on this basis, further agreements with Computing Services provide for maintenance of the hardware and peripherals (other than the CPU disk drives) at about one-half the cost of external maintenance agreements and service is readily available on site, an important consideration for an installation that is 75 miles from the nearest large city. Beyond maintenance and repair support, Computing Services is able to provide loan equipment (such as a terminal or modem) while repairs are being made.

Based on our experience, if at all possible, work closely with existing computer expertise within or available to the organization. The savings in time and personnel as well as money can be better used to provide library services.

Installation

In March 1982, installation of the HP3000/40 began. With loading of our OCLC archival tapes scheduled for July, Murphy's Law made its first of many appearances. Virginia Tech had a new program (offering a segmented rather than a single unit database) which they promised with only a three-week delay. We should have known from our OCLC experience that enhancements promised by systems people are always late. It was late August before the new program was installed and archival tape loading could begin. Loading the tapes, which contained 356,000 records, extended until the end of March 1983. At the outset, six records were loaded each minute. By the end, this had slowed to 1.5 records per minute. The rate of loading is determined by the software—under the VTLS system, each character is interrogated in loading and then passed to the buffer. When the buffer is X% full (we had set it at 80%), the buffer process then writes the record to the database and establishes the chains. We learned, belatedly, that one ought to do a super-chain process and a Syst-Dump after loading each tape. The super-chain process is the only means of speeding up the loading process.

We also learned that at the beginning of the loading of the first tape the recovery system should be tested. We lost 4-1/2 weeks of work by not doing a "Syst-Dump and restore" to ensure the correct functioning of the recovery system.

During the installation phase, circulation personnel became concerned that insufficient items would be barcoded and linked to permit implementation of the circulation system. Within our libraries, collection development and ordering is handled by professional staff serving as subject bibliographers in their areas of expertise. It was agreed that, beginning in the summer of 1982, the bibliographers—with the assistance of other staff and student employees—would barcode the volumes in that part of the LC schedule which fell within their areas of responsibility. Dual barcodes were used, with one placed in each monograph and its twin placed on the back of the shelflist card. The cataloging department could then use a lightpen to scan the barcode on the shelflist and link it to the bibliographic record in the database. Linking is necessary for circulation and also to indicate the location(s) of titles.

In retrospect, this immense effort—resulting in the barcoding of 289,000 volumes—was not needed to implement the circulation function. It proved more efficient to link each volume after it circulated. However, it permits linking of non-circulating titles (i.e., reference) and those which are yet to circulate without physically handling each volume. Linking is essential for maximum benefits from the online public catalog. This applies only to volumes in the collection before March 1983. Once the archival tapes were loaded, each addition to the collection is linked as part of the cataloging routine. One strength of the VTLS system is this interface which obviates the need to continue to acquire and load OCLC tapes once the retrospective tapes have been entered.

While the barcoding was demanding of professional staff time, it served to greatly increase bibliographers' familiarity with the collection areas for which they were responsible. It also afforded the opportunity to systematically weed the collection for the first time in many years.

Inauguration and Upgrading

With the completion of tape loading, testing of the system and staff training began in earnest. Limited training had begun earlier for the circulation staff. It was evident that the system was ready for its debut, but it was also evident that the hardware and storage would soon be inadequate for our needs, not to mention meeting the needs for five years to come.

It should be stressed that, in planning and acquiring the system and the hardware configuration, we thoroughly established our wants and needs and refined these in terms of budgetary realities. Expert advice was sought and checked and double checked. But even before becoming officially available, response time problems and the need for greater database capacity and more terminals dictated the enlargement of the system.

While some library staff were preparing for the inaugural shower for our new automated system, others were in consultation with Hewlett Packard negotiating an upgrade. The inaugural cocktail party was held on July 15, 1983, to introduce the system to the campus community (and to thank the staff of the library and computer services as well as the numerous faculty and administrators who had contributed to the realization of the system). As utilized at Ohio University, the system was named ALICE. A name-that-system campaign was held among library staff which resulted in a host of acronyms. The librarian at a regional campus reminded us that the name need not be an acronym, as evident in the language Pascal. Almost synchronously, the name ALICE was suggested with allusions to the Wonderland which the system would open for library users. Clinching the argument, it was noted that in the song "White Rabbit," the Jefferson Airplane advised, "Go ask Alice, I'll think she'll know"—exactly the attitude we hoped to cultivate toward the new system.

Within the same time frame, negotiations were concluded with Hewlett-Packard to trade the HP 3000/40 on the new HP3000/68 with an interim HP3000/64 until the 68 became available. Three additional 404 MB drives were also acquired. Under a special offer then effect, an HP125 microcomputer with software was added at no additional cost. This HP120

gives us a backup to record check-ins and check-outs at circulation during times that the system is down.

After the inauguration, full implementation of the system began with the fall quarter of 1983/84. In October, the switch to the HP3000/64 was accomplished. In February 1984, this was converted to the 68 series with the addition of one extra block of main memory and disc caching.

The upgraded system has performed to our expectations. It has also greatly increased the terminal capacity. After one year, we have 9 terminals for cataloging and other exclusive staff use, 4 for circulation transactions, 3 ports for connection through the computer network or by dial access, and 25 public terminals—at least one of which is available on each of the main library's seven floors as well as in the separate music library. Appendix C presents Alice's current (mid-1984) configuration of hardware and terminals.

This dispersal of public terminals has eliminated the central card catalog and the need for multitudinous departmental catalogs. On May 13, 1983, the main catalog was officially closed. Not only do users no longer need to check the main catalog, as a result of our cooperation with Computing and Learning Services, the library system is integrated into the intra-university computing network (diagrammed in Appendix D). Through communications controllers and a Gandalf Port Contention Controller, any of the hundreds of terminals spread across the campus (and on regional campuses) can access the library system. Moreover, the network permits dial access and thus the library system is accessible through a phone datalink from anywhere. One important impact is that the question of the number of public terminals needed is somewhat muted, virtually any terminal is a public terminal with access to the online public access catalog (including information on item availability).

Networking

With participation in the intra-university computer network, long-standing commitments to cooperation and service, the capabilities of the VTLS software, and as the only research library serving rural south and southeastern Ohio, it was probably inevitable that no sooner had ALICE become operational than explorations began for extending service to other libraries. This took two main thrusts: service to regional campuses and service to public libraries (through the regional network OVAL—Ohio Valley Area Libraries—comprised of eleven public libraries in ten counties). Complementing planning for these extensions, Ohio University has been planning for a microwave system to serve regional campuses and technical colleges and other colleges in the region. The availability of the library system has been an important addition to the planning for the interconnect system. The projected system is pictured in Appendix E.

While the microwave interconnect system will require special appropriations, planning has proceeded on extending service to the regional campuses and the public libraries, joint committees for each comprised of our staff and representatives of the participating institutions have been meeting regularly since October 1983.

As noted, dial access to ALICE on the Athens campus is currently available. Regional campuses currently utilize this facility as well as existing connections into the intra-university computer network to check our holdings for titles of interest. But planning is well underway to provide a separate but linked regional campus database which will afford the regional campuses all of the facilities of the VTLS system. Equipment is currently being installed at the Lancaster campus as the prototype (other regional campuses are at Belmont, Chillicothe, Ironton, and Zanesville). Lancaster's retrospective OCLC tapes will be loaded into the regional campus database (which affords all of the services of the main campus database). An existing microwave communications linkage is used, eliminating line charges.

Difficulties Encountered — Lessons Learned

Despite our general satisfaction and success in acquiring and implementing the VTLS system, the foregoing should indicate that the experience has not been without trials and tribulations. We share these with those who are contemplating or planning an integrated online system in the hope that they may be spared some grief.

1. Estimating equipment needs.

   Attempting to specify the exact hardware configuration that will be needed while providing for system growth is difficult to say the least. In part this is a function of the pace of change in computer technologies. There is a reluctance to acquire equipment which will soon be outdated; however, even the most careful planning is no guarantee that this will not be the case. As funds for hardware purchases are not unlimited, specification and procurement require careful estimates. Hardware vendors, to remain competitive, may recommend smaller equipment with marginal growth potential. As noted, even as the system became operational, it was obvious that greater capacity was needed. Upgrading to the HP3000/68 nearly doubled our hardware costs and our maintenance costs. At the same time, it also became evident that the initial projection that three 404 MB disk drives would be adequate for one million bibliographic records was grossly over-optimistic. With 400,000 records loaded, we discovered that an additional three 404 MB drives would be needed—at a cost of $65,000. Technology contributes to this. At the June 1984 users group meeting, Hewlett Packard reported that its five-year projection is that computing power will double and cost will be halved.

2. Estimating other costs.

   Cost overruns in automated systems extend well beyond hardware, although hardware is a significant factor. Recognizing the potential for overruns, we added a fudge factor of 25%. Our experience indicates that even 50% is likely insufficient. While this consideration may pose some problems for larger institutions, for smaller libraries with limited funding such overruns could be critical.

3. Loading archival tapes.

Because of the nature of the VTLS database and limited guidance in setting parameters, we found that tape loading required much longer than predicted, with a severe reduction in loading speed as the database grew. Of course, this was a function of the proportion of our collection on tape. Having participated in OCLC for more than a decade and having undertaken several retrospective conversion projects during that time, the number of records which we had on tape greatly exceeded previous VTLS users.

4. Availability of the system during loading.

An automated system which is unavailable is worse than a return to a manual system. Backlogs are created at each step of the process which then must be processed. The unavailability of the system has resulted from installation of new equipment or the installation of new versions of the VTLS software. Such down time must be scheduled for slack times; for us this is during breaks between quarters. We hope that we have made a major step toward alleviating the problem of having to fully unload and load the system each time. "Adager," a utility for H-P's IMAGE system which allows database manipulation and modification without loading and unloading, has been ordered and we hope will eliminate much of this problem.

5. Securing the database.

In offering access to the system from many different locations in the library (several of which are uncontrolled), from any terminal on campus, and by telephone, library users have much greater access to the database. Unfortunately, this is true for experimenters or vandals as well as for the serious user. At the end of our Spring Quarter, we had a serious problem with a "Dr. Who," who was able to enter the circulation system and record 118 checkouts for books still in the library. We also had sporadic cases of other individuals, presumably computer science students, attempting to enter the system in statuses to which they were not entitled. This problem has been brought to the attention of Virginia Tech, which reports that new security measures will be available in the Fall of 1984. Despite such efforts, this problem is likely to remain endemic. As people climb Mt. Everest because its there, students are likely to attempt to enter the database for the same reason. Our only solace is that, as yet, such unauthorized entries, seem prompted more by curiosity or a practical joke than malicious intent.

6. Turnover in VTLS personnel.

Perhaps a tribute to the success of the VTLS system is the extent to which the staff have moved to other, more responsible positions. An attraction of the VTLS system was that the people engaged in development and in support were familiar with libraries, and, for us, were familiar with large academic libraries. We found them helpful and congenial. Unfortunately, the meteoric rise in installations of the system since our original contract has brought many changes. Many of the people with whom we originally worked, and who made particular commitments to us, have since left Virginia Tech for other

positions. As the number of using institutions grows, the personal contacts become more tenuous, and one is forced to formal means of registering complaints and suggestions. During the past year, Virginia Tech has developed a logging system for phoned-in problems, which has largely alleviated a lack of follow-up due to changing personnel or responsibilities.

7. Delays in developing promised subsystems.

Delays in the development and introduction of subsystems and enhancements seems intrinsic to the library automation field. Virginia Tech is no exception. Of course, different institutions have different priorities, and those responsible for selling the system will tend to emphasize what the potential purchaser wants to hear. When we first acquired the software, we were told to expect serials control and acquisitions within a year. We now have had the system operational for a year and are still told to expect these two subsystems within a year. To be fair to the VTLS organization, they have concentrated on improving and enhancing the cataloging, circulation and online public access catalog components of the system (including authority control, word search, and Boolean operators). We agree that it is important to have this core to work as well as possible before diverting staff and resources to other development efforts—as long as the delay does not become unreasonable. Conversely, when users are told that an enhancement or subsystem will be available by a certain date, much frustration could be avoided if the vendor and systems people would strive to provide realistic projections and then to achieve those targets. This situation is akin to the "revolution of rising expectations" described for the Third World. While system users have far more capacity and benefits than previously, they have been led to expect even more.

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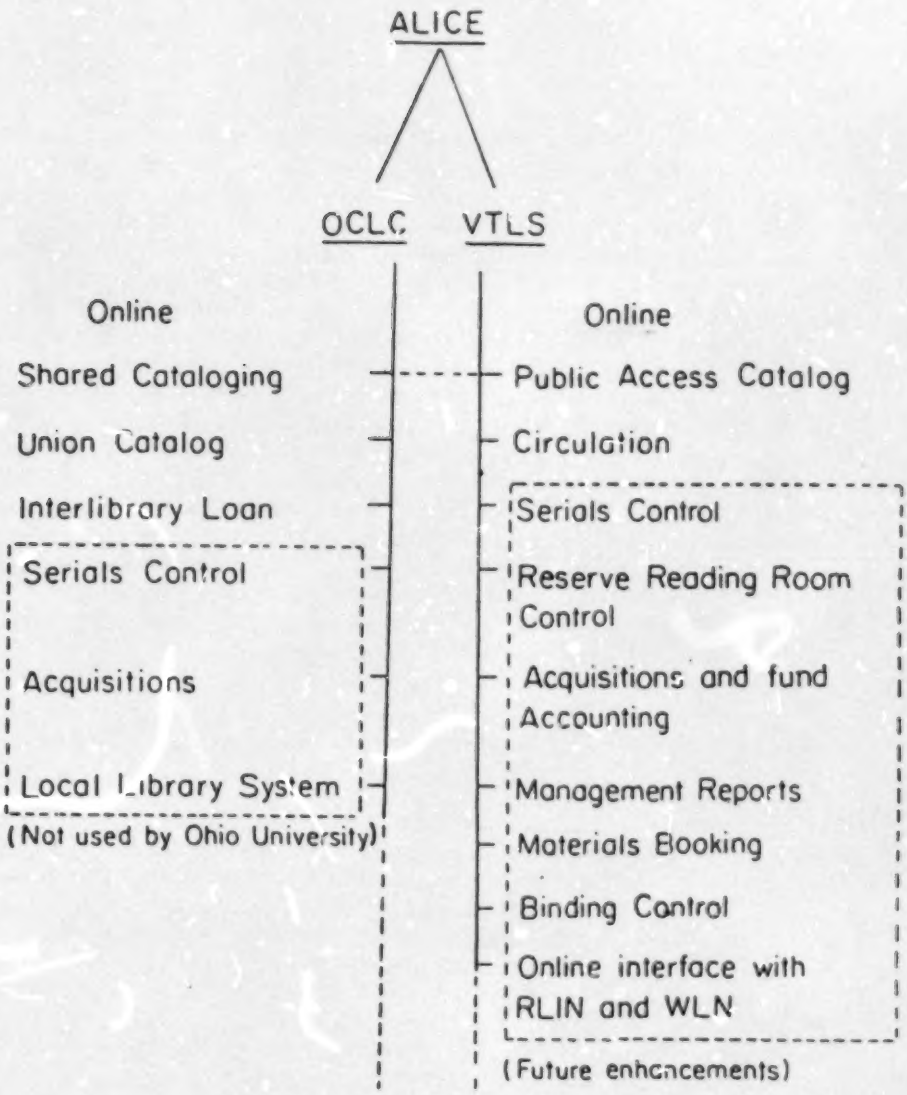
Conclusion

At the tender age of one, ALICE is a well-behaved child whose growth threatens to exceed our wildest hopes and imagination. While there are things which we would do differently (as described above), selecting the VTLS system is not among them. Perhaps our pride shows. In recent months, we have received visits and telephone calls from libraries considering integrated systems. We have responded as fully and as honestly as possible. We are aware that several of these have since joined the VTLS family. In our own evaluation of alternative systems, we found discussions with users to be extremely valuable. Institutions considering VTLS should be aware that an active users group has been formed. Information on the Group and on the results of occasional surveys of users are available from the newly elected Chair: Jack Bazuzi of the Virginia State Library. We also remain willing to show off our one-year-old ALICE

APPENDIX A

OCLC-VTLS Complementarity



APPENDIX B

VTLS - ALICE Screens

Online Public Access Catalog Screens
(Search for title: Megatrends)

```
t/megat
O.U. LIBRARIES - ALICE          - - - - - - - - - - - - - - - - QUALIFYING TITLES
 1. Megatrends : ten new directions transforming our lives /
    by John Naisbitt.
Please enter NEW COMMAND or LINE # of selection
1
                              # # # # # # #
O.U. LIBRARIES - ALICE          - - - - - - - - - - - MENU OF COPIES AND VOLUMES
Call No: HN59.2 N34 1982
Author: Naisbitt, John.
Title: Megatrends : ten new directions transforming our lives /    ...

    LOCATION          STATUS          ITEM-ID    COPY   UNITS
 1. General Stacks    Due: 9Sep84     1000314978 c.  1
 2. General Stacks    Due: 23Jul84    1000[illegible]5592 c.  2
 3. General Stacks    Available       1000319744 c.  3
Please enter NEW COMMAND or LINE # of selection
1
                              # # # # # # #
O.U. LIBRARIES - ALICE          - - - - - - - - - - - - - - - - - - - ITEM SCREEN
Call Number - HN59.2 N34 1982
Author ------ Naisbitt, John.
Title ------- Megatrends : ten new directions transforming our lives /    ...
Item Number - 1000314978
Copy Number - 1                                  ..... HISTORICAL DATA .....
Location ---- General Stacks                     Entry date into system: 13Jun83
Loan Period - 365                                Circulation count to date: 6
Status: CHECKED OUT ON 21Jun84          DUE  9Sep84


                              # # # # # # #
O.U. LIBRARIES - ALICE          - - - - - - - - - - - - - BIBLIOGRAPHIC SCREEN
. HN59.2 N34 1982

. Naisbitt, John.

. Megatrends : ten new directions transforming our lives /
  by John Naisbitt.
. New York : Warner Books, c1982.

. 290 p. ; 24 cm.

. Includes bibliographical references and index.

. UNITED STATES -- SOCIAL CONDITIONS -- 1970-
. SOCIAL INDICATORS -- UNITED STATES.
. SOCIAL PREDICTION.
```


BEST COPY

Sample Circulation Screens
(Patron: Mulliner)

```
O.U. LIBRARIES - ALICE    - - - - - - - - - - - - - QUALIFYING PATRON NAMES
  1. MULLINER BRIAN KENT              -- RT 1 BOX 224
Please enter NEW COMMAND or LINE # of selection
1

                              ! ! ! ! ! ! !
O.U. LIBRARIES - ALICE    - - - - - - - - - - - - - PATRON ACTIVITY SCREEN
Id: 2528522389   Initials: BKM   Type: ST   Circ-period: ST   Delinquency:

The following books are on hold/recall for patron:
     ITEM NO.     UNTIL TYPE                    TITLE
 1. 10001324'3 23Jul84  R: Cognition and memory / c edited by F. Klix and

The following books are currently on loan to patron:
     ITEM NO.   C. OUT    DUE    LTB RN                    TITLE
 2. 1000259988 20Jun84   9Sep84       0 Public administration; policy-mak
 3. 1000331461 20Jun84   9Sep84       0 Inforaation technology : an intro
 4. 1000056392 20Jun84   9Sep84       0 Running wild : the next industria
 5. 1000249473 20Jun84   9Sep84       0 Library aanageaent without bias /
 6. 1000296951 20Jun84   9Sep84       0 The future of satellite coaaunicatio
 7. 1000010027 20Jun84   9Sep84       0 Key papers in the economics of infor
 8. 1000057351 20Jun84   9Sep84       0 The Eastasia edge /  Roy Hofheinz,
 9. 1000496452  6Jul84   9Sep84       0 Objective perforaance aeasures for a
10. 1000005338  9Jul84   9Sep84       0 The evolution of aanageaent thought

                              ! ! ! ! ! ! !
O.U. LIBRARIES - ALICE    - - - - - - - - - - - - - - - - - - PATRON SCREEN
 1. PATRON-ID ----- 2528522389
 2. INITIALS ------ BKM
 3. PATRON-TYPE --- ST
 4. CIRC-PERIOD --- ST
 5. DELINQUENCY ---
 6. LAST-NAME ----- MULLINER
 7. FIRST-NAME ---- BRIAN
 8. MIDDLE-NAME --- KENT
 9. ADDRESS-1 ----- RT 1 BOX 224
10. ADDRESS-2 -----
11. DEPARTMENT ---- LIBR
12. CITY ---------- RUTLAND
13. STATE --------- OH
14. ZIP ----------- 45775
15. PHONE-NUMBER --
16. OCCURRENCE ----
17. AMOUNT-PAID ---
18. RENEW-DATE ---- 30Jun83
19. REMARKS-1 -----
20. REMARKS-2 -----
Please enter NEW COMMAND or LINE # to update
```

APPENDIX C

Ohio University Libraries

VTLS - ALICE Equipment

Located at Haning Hall (University Computing and Learning Services)

1 - HP3000/68, 3MB computer (with disc caching), MPE 5 operating system; 64 ports available, 37 ports in use
6 - 404 MB disk drives
1 - Dual density tape drive: 6,250 BPI
1 - Standard HP console

Located in Circulation Department (4th floor, Alden Library)

1 - HP 125 microcomputer with 2 disk drives (system backup)
1 - HP inkjet printer (connected to microcomputer)
4 - ADM5 Terminals with barcode readers (light pens - MICOM Micro 400)
1 - Intermec barcode printer - Code 39
1 - HP2631B printer

Located in Acquisitions Department (4th floor, Alden Library)

1 - OCLC terminal (M300 work station)
1 - ADM5 terminal
1 - Concept 108 (ALA character set) terminal, with barcode reader
1 - Interface unit (VTLS) with T-bar.

Located in Cataloging Department (4th floor, Alden Library)

4 - OCLC terminals (2 - M300 work stations; 2 - Model 105)
3 - Concept 108 (ALA character set) terminals, with barcode readers
2 - ADM5 terminals
2 - Interface units (VTLS) with 2 T-bars

Located in Music Library (5th floor, Music building)

1 - ADM5 for public use
1 - ADM5 with barcode reader for circulation

Terminals (ADM5) at service points, Alden Library, public and staff use

Floor	Department	Floor	Department
1	Southeast Asia	4	Reference
2	Fine Arts	5	Archives & Special Coll.
3	Health Sciences	5	Documents
3	Reserve Room		

Terminals in public areas

14 - ADM5, Public catalog area, 4th floor entry

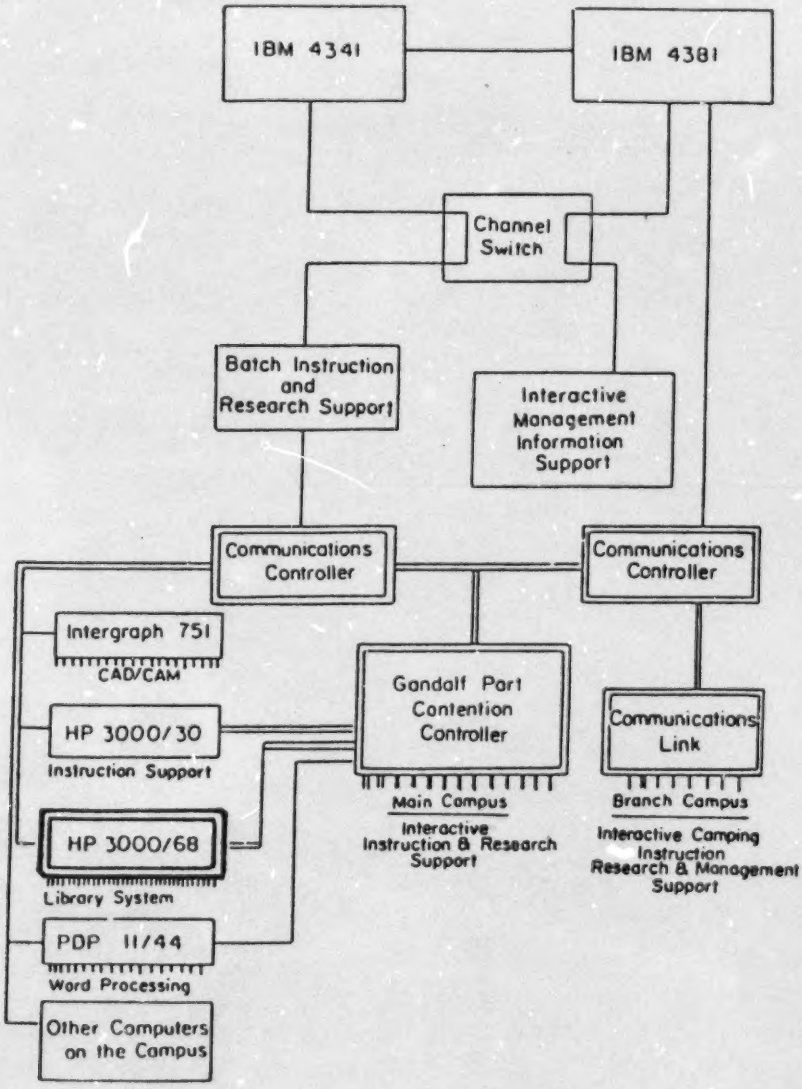
2 - ADM5, 1 each on 6th and 7th floor, main stack area

3 - Ports for dial access or through intra-university computer network

APPENDIX D

ALICE in University Network

INTRA-UNIVERSITY COMPUTING NETWORK



APPENDIX E

Proposed Microwave Interconnect System

BEST COPY